

REMARKS

This responds to the Office Action mailed on March 1, 2005, and the references cited therewith.

Claims 8 and 19 have been canceled, as a result, claims 1-7 and 9-18 and 20-22 are now pending in this application.

Claims 1, 2, 7, 9-17 and 20-22 have been amended. "A metal" has been deleted from claim 1. Claim 2 has been made independent by incorporating the subject matter of claim 1 therein. The subject matter of claim 8 has been incorporated into claim 7. Claim 9 has been made independent by incorporating the subject matter of claim 7 therein. The dependencies of claim 10-16 and 20-22 have been amended to correct inadvertent typographical errors. The term "labeled for use" has been added to claims 13 and 15 to clarify the subject matter therein. The subject matter of claim 19 has been incorporated into claim 17. Applicant submits that no new matter has been added to the specification.

Information Disclosure Statement

Applicant appreciates the Examiner's clarification with regard to the April 28, 2003 Information Disclosure Statement and regrets any inconvenience caused by the confusion.

Claim Objections

Claims 8-10 were objected to as being duplicate claims because they depend from claim 6, which depends from claim 1. The Examiner also asserts that claim 13 should depend from claim 7.

Applicant has cancelled claim 8 and amended the dependencies of claims 9-16, which contained inadvertent typographical errors in their dependencies. Applicant requests withdrawal of this objection.

§112 Rejection of the Claims

Claims 11, 13-15, 20 and 21 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite with regard to the following issues.

The Crosslinking Agent

The Examiner asserts that “the crosslinking agent” claim 11 is indefinite due to improper dependency of claim 11. The dependency of claim 11 has been amended so that this claim now depends on claim 10. Applicant requests withdrawal of this rejection with respect to claim 11 and language relating to “the crosslinking agent.”

Use of the Labeled Proteinoid Microspheres

The Examiner asserts that claims 13 and 15 are allegedly indefinite because a use for the labeled microspheres is allegedly claimed without method steps for accomplishing the use. Claims 13 and 15 are directed to labeled proteinoid microspheres “labeled for use” in immunoassays, diagnostic imaging or signal amplification. Applicant submits that one of skill in the art would label proteinoid microspheres differently for these procedures. Thus, the language of claims 13 and 15 clarifies how the proteinoid microsphere can be labeled. Applicant submits that the language of claims 13 and 15 is definite and requests withdrawal of this rejection with respect to these claims.

Immunoassay

The Examiner asserts that “the immunoassay” in claim 14 is indefinite due to improper dependency of claim 14. The dependency of claim 14 has been amended so that this claim now depends on claim 13. Applicant requests withdrawal of this rejection with respect to claim 14 and language relating to “the immunoassay.”

The Acidic Amino Acid

The Examiner asserts that “the acidic amino acid” in claim 20 is indefinite due to improper dependency of claim 17. The dependency of claim 20 has been amended so that this

claim now depends on claim 18. Applicant requests withdrawal of this rejection with respect to claim 20 and language relating to “the acidic amino acid.”

The Basic Amino Acid

The Examiner asserts that “the basic amino acid” in claim 21 is indefinite due to improper dependency of claim 17. The dependency of claim 20 has been amended so that this claim now depends on claim 18. Applicant requests withdrawal of this rejection with respect to claim 20 and language relating to “the basic amino acid.”

§103 Rejections of the Claims

To establish a *prima facie* case of obviousness under 35 U.S.C. §103(a), three basic criteria must be met. First, there must be some suggestion or motivation to modify the reference or to combine reference teachings. Second, the reference(s) must teach or suggest all the claim limitations. Finally, there must be a reasonable expectation of success. The teaching or suggestion to make the claimed modification and the reasonable expectation of success must both be found in the prior art, not in applicant’s disclosure. *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143. If the cited documents do not teach or suggest all the claim limitations, the rejection is improper.

Lohrmann and Steiner

Claims 1, 5-8 and 12-22 have been rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Lohrmann et al. (U.S. 6,193,953) in view of Steiner et al. (U.S. 4,925,673). The Examiner has alleged that Lohrmann discloses protein microparticles that are comprised of chemically synthesized amino acid polymers, citing to Lohrmann at col. 5, lines 40-57, and that Lohrmann discloses chromium as a label at col. 3, lines 39-42. According to the Examiner, Lohrmann does not disclose proteinoid microspheres but this defect is cured by Steiner, which does disclose proteinoid microspheres.

Claim 1 is directed to a labeled proteinoid microsphere comprising a mixture of amino acids that are condensed and a label comprising a fluorophore, a chemiluminescent molecule, a radioisotope, a paramagnetic ion, or an enzyme; wherein the label is linked to the proteinoid

microsphere. Claim 7 is directed to a labeled proteinoid microsphere that is capable of binding to a specific target comprising a proteinoid microsphere linked to a label and a selective binding moiety that can bind to a specific target, wherein the label comprises a fluorophore, a chemiluminescent molecule, a radioisotope, a paramagnetic ion, or an enzyme. Claim 17 is directed to a labeled proteinoid microsphere that is capable of binding to a specific target comprising a proteinoid microsphere linked to a label and an antibody that can bind to a specific target, wherein the label comprises a fluorophore, a chemiluminescent molecule, a radioisotope, a paramagnetic ion, or an enzyme.

Applicant submits that the cited references do not teach or suggest all of the present claim limitations. In particular, neither Lohrmann nor Steiner discloses the present labeled proteinoid microspheres. While the Examiner has alleged that Lohrmann teaches labeling of microspheres with chromium the a label at col. 3, lines 39-42, Applicant submits that Lohrmann in fact is disclosing “tanning” the microspheres with a metal salt solution rather than labeling the microspheres. See Lohrmann at col. 3, lines 39-42 and col. 4, lines 16-29. Tanning provides increased in vivo longevity. See Lohrmann at col.4, lines 16-29. The chromium salts employed do not label the microspheres and are not used for detection of the microspheres. Instead, Lohrmann chooses to include “a gas and/or a liquid” in the microsphere (see Lohrmann at col. 5, lines 11-38) – not a label as provided in Applicant’s claims.

Similarly, Steiner (U.S. Patent No. 4,925,673) is limited to disclosure of microspheres that contain pharmacological agents, where the microspheres are explicitly designed to release the pharmacological agent in the blood, target organ or bodily fluid. See Steiner at col. 3, line 49 to col. 4, line 33. Applicant submits that a pharmacological agent is not a label. Even if a pharmacological label could somehow be construed to be a label, release of the pharmacological agent as contemplated by Steiner would defeat the purpose of Applicant’s labeled proteinoid microspheres (detection of the label associated with the microsphere). Thus, neither Lohrmann nor Steiner discloses the presently claimed labeled proteinoid microspheres.

Moreover, one of skill in the art would not be motivated to modify the cited references to include a label because the motivation to modify must come from a suggestion in the references. Here there is no suggestion to label microspheres in the manner claimed by Applicants. Hence,

upon reading Lohrmann and Steiner one of skill in the art would not find a reason to modify the teachings of the references to produce Applicants invention.

Nor would one of skill in the art have a reasonable expectation of successfully producing Applicant's invention - again because neither Steiner nor Lohrmann teaches Applicant's labeled proteinoid microsphere.

Therefore, Applicant submits that the combination of Lohrmann (U.S. Patent 6,193,953) and Steiner (U.S. Patent No. 4,925,673) does not produce the claimed invention and requests withdrawal of this rejection under 35 USC § 103(a) of claims 1, 5-8 and 12-22.

Lohrmann, Steiner and Lee

Claims 2 and 9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lohrmann et al. (U.S. 6,193,953) in view of Steiner et al as applied to claims 1,5-8 and 12-22 above, and further in view of Lee et al. (U.S. Patent 6,191,278).

Claim 2 is directed to a labeled proteinoid microsphere comprising a mixture of amino acids that are condensed and a label, wherein the label is barium sulfate, iocetamic acid, iopanoic acid, ipodate calcium, diatrizoate sodium, diatrizoate meglumine, metrizamide, tyropanoate sodium, fluorine-18, carbon-11, iodine-123, technitium-99m, iodine-131, indium-111, fluorine, gadolinium, fluorescein, isothiocyalate, rhodamine, pacific blue, phycoerythrin, phycocyanin, allophycocyanin, ophthaldehyde, fluorescamine, luminal, isoluminal, luciferin, luciferase or aequorin. Claim 9 is directed to a labeled proteinoid microsphere that is capable of binding to a specific target comprising a proteinoid microsphere linked to a label and a selective binding moiety that can bind to a specific target, wherein the label is the same as for claim 2.

Lee is limited to disclosure of certain water-soluble rhodamine dyes and provides no disclosure or teaching of proteinoid microspheres or that the dyes should be used with proteinoid microspheres. While the Examiner points to Lee at col. 4, lines 39-61 as allegedly disclosing labeling of microspheres with the rhodamine dyes, Applicant submits that without a teaching by Lohrmann or Steiner that proteinoid microspheres should be labeled, this combination of references does not render the present claims unpatentable. As described above, neither Lohrmann nor Steiner discloses labeling proteinoid microspheres as presently claimed.

Moreover, as admitted by the Examiner, Steiner is the only reference that discloses proteinoid microspheres. See Office Action at page 5 (March 1, 2005). Lohrmann is limited to protein shells that are tanned with metal salts and Lee provides no disclosure or mention of proteinoid microspheres. Hence, the only motivation to modify a proteinoid microsphere can come from Steiner and, because Steiner only contemplates encapsulating pharmacological agents in the proteinoid microspheres, one of skill in the art would not be motivated to combine the proteinoid microspheres of Steiner with the particles and dyes of Lohrmann and Lee. Hence, upon reading the combination of Lohrmann, Steiner and Lee, one of skill in the art would not find a reason to modify the teachings of the references to produce Applicants invention.

Nor would one of skill in the art have a reasonable expectation of successfully producing Applicant's invention - again because none of the references teaches that proteinoid microspheres should be labeled in the manner contemplated by Applicants.

Therefore, Applicant submits that the combination of Lohrmann (U.S. Patent 6,193,953), Steiner (U.S. Patent No. 4,925,673) and Lee (U.S. Patent 6,191,278) does not produce the claimed invention and requests withdrawal of this rejection under 35 U.S.C. § 103(a) of claims 2 and 9.

Lohrmann, Steiner and Mathiowitz

Claims 3, 4, 10 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lohrmann et al. (U.S. Patent 6,193,953) in view of Steiner et al. as applied to claims 1, 5-8, and 12-22 above, and further in view of Mathiowitz et al. (U.S. Patent 5,271,961).

Claims 3 and 4 depend ultimately from claim 1, which is directed to a labeled proteinoid microsphere comprising a mixture of amino acids that are condensed and a label comprising a fluorophore, a chemiluminescent molecule, a radioisotope, a paramagnetic ion, or an enzyme; wherein the label is linked to the proteinoid microsphere. Claims 10 and 11 depend ultimately from claim 7, which is directed to a labeled proteinoid microsphere that is capable of binding to a specific target comprising a proteinoid microsphere linked to a label and a selective binding moiety that can bind to a specific target, wherein the label comprises a fluorophore, a chemiluminescent molecule, a radioisotope, a paramagnetic ion, or an enzyme.

Mathiowitz (U.S. Patent No. 5,271,961) is limited to disclosure of methods for making protein microspheres by mixing a solution of proteins (not amino acids) while evaporating the solvent. Mathiowitz contemplates using these protein microspheres for drug delivery, and for delayed release of pesticides, fertilizers and agents for environmental cleanup. *See* Mathiowitz at col. 2, lines 44-48. Nowhere does Mathiowitz contemplate labeling the protein microspheres. Hence, Mathiowitz does not cure the defects of Lohrmann and Steiner, because, as described above neither Lohrmann nor Steiner discloses labeling proteinoid microspheres as presently claimed.

Therefore, Applicant submits that the combination of Lohrmann (U.S. Patent 6,193,953), Steiner (U.S. Patent No. 4,925,673) and Mathiowitz et al. (U.S. Patent 5,271,961) does not produce the claimed invention and respectfully requests withdrawal of this rejection under 35 U.S.C. § 103(a) of claims 3, 4, 10 and 11.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (516) 795-6820 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

STEPHEN QUIRK

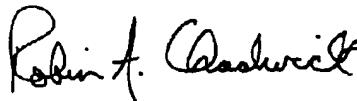
By his Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.

P.O. Box 2938

Minneapolis, MN 55402

(516) 795-6820



Date May 31, 2005

By _____

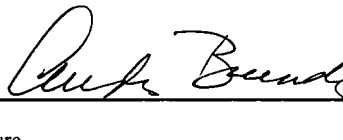
Robin A. Chadwick

Reg. No. 36,477

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 31 day of May, 2005.

CANDIS BUENDING

Name



Signature